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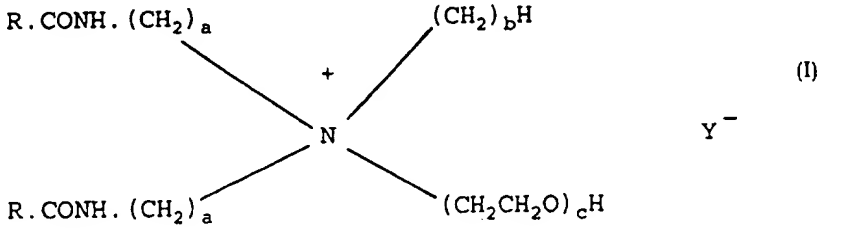

(I)

(57) Abstract

A fabric softener composition comprises a cationic fabric softener of formula (I), an organic solvent or solvent mixture, and, optionally, water. Compounds in formula (I) may be dissolved in organic solvents of high boiling point to yield isotropic liquids with high flash points and low freezing temperature.

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FABRIC SOFTENER COMPOSITION

Technical Field

The present invention relates to a liquid fabric softener composition for inclusion in the rinse stage of a fabric washing cycle. In particular, it relates to a so-called concentrated fabric softener composition.

Background Art

Conventional fabric softener compositions generally include, as their active component, a relatively water insoluble cationic compound which includes a quaternary ammonium group in which the nitrogen atom carries long alkyl groups, Examples of such compounds include dimethyl dihydrogenated tallow ammonium salts and the corresponding unhydrogenated tallow derivatives. These compounds are generally used as aqueous dispersions.

When storage space for laundry products is limited, or it is desirable to reduce the quantity of packaging, then concentrated fabric softener compositions containing high levels of the active component are preferred. In order to increase the amount of cationic compound which may be included in an aqueous dispersion, it is known to add electrolytes, viscosity modifying polymers, and coactives. However, it remains difficult to achieve concentrations of cationic component of 30 weight

percent or more. At high cationic levels, compositions tend to become unstable, particularly when stored, and/or undesirably viscous.

An alternative approach is to make a solution of the cationic, fabric softening, component by including an organic solvent in the composition. While this may allow larger amounts of the water-insoluble component to be included, it has the disadvantage that the resulting compositions generally acquire an undesirably high flammability and an unpleasant smell.

The present inventors have, however, found that by appropriate choice of cationic fabric softener compound, compositions containing high concentrations of fabric softener may be formulated using organic solvents of low flammability. Furthermore, the inventors have found that by appropriate choice of cationic and solvent, compositions having not only low flammability, but also low freezing temperatures may be obtained. This is contrary to normal experience where the use of a high organic solvent of low flash point is necessary to achieve low freezing temperature. The achievement of low freezing temperature is an important consideration in markets where laundry products are stored outdoors in cold conditions, for example in Japan.

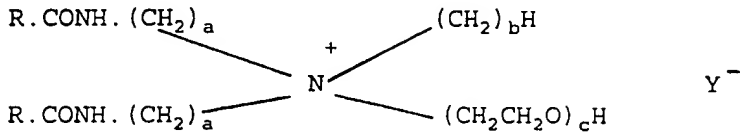
Disclosure of the Invention

According to the present invention, there is

provided

a fabric softener composition comprising:

(1) from 10 to 70% by weight of a cationic fabric softener of formula (I)

(I) 

wherein each a is independently from 1 to 5, preferably from 1 to 3, b is also from 1 to 5, preferably 1 to 3, c is from 1 to 10, preferably from 1 to 6, more preferably from 1 to 3, and each R is independently selected from saturated and unsaturated alkyl groups having from 14 to 22 carbon atoms, preferably from 14 to 18 carbon atoms and Y is an anion, for example selected from halide, methyl sulphate, and ethyl sulphate;

(2) from 10 to 60% by weight of an organic solvent, or an organic solvent mixture; and, optionally,

(3) water;

said cationic fabric softener being soluble in said organic solvent or organic solvent mixture and water (if present) and said solvent or solvent mixture being chosen such that the flash point of the composition is at least 25°C, preferably at least 30°C, particularly preferably at least 40°C and, ideally, at least 50°C. Preferably, dissolution of the cationic fabric softener in the organic solvent or

solvent mixture and water (if present) results in a substantially isotropic solution. That is the solution is preferably clear or only slightly cloudy.

By flash point is intended the minimum temperature to which a product confined in a closed cup must be heated for vapour to ignite momentarily in the presence of a flame when operating under standardised conditions of, for example, equilibration time and pressure. Flash points specified herein are as measured using a Setaflash™ apparatus from Stanhope-Seta (Chertsey) using a 1 minute equilibrium time and atmospheric pressure.

The cationic fabric softener of formula (I) is preferably included in the fabric conditioner composition in an amount of 20 to 60% by weight of the composition, particularly preferably from 40 to 50% by weight. The cationic fabric softener may be a single compound but may also be a mixture of compounds, for example having R groups of different lengths and degrees of saturation. One example of a suitable commercially available fabric softener is Varisoft 222™ from Rewo Sherex. This includes 90% by weight of a cationic fabric softener of formula (I) in which a=2, b=1 and c=1.7; Y^- is methylsulphate; the long chain distribution in the R groups of Varisoft 222™ is:

C_{14}	$C_{16=}$	C_{16}	$C_{18^{2=}}$	$C_{18=}$	C_{18}
5%	8%	6%	17%	61%	3%

(= denotes the presence of one double bond, and 2= of two double bonds).

In order to ensure that a substantially isotropic liquid product may be produced, it may be necessary to select an appropriate distribution of chain lengths and saturations. In general, the higher the molecular weight of the cationic, and the longer the R groups the more desirable it becomes to have a higher proportion of unsaturated, or multiply unsaturated R groups. In general, it is preferable that the proportion of saturated carbon chains having 18 or more carbon atoms is less than 10%, in particular less than 5% and, particularly preferably, not more than 3%.

The fabric softener composition preferably comprises from 20 to 50%, particularly preferably 20 to 40% by weight of the organic solvent or organic solvent mixture.

The solvent mixture may include low boiling point solvent derived from the cationic fabric softener and present in the cationic fabric softener as a result of its manufacture or processing. Examples of such solvents include isopropyl alcohol and ethanol. For example, the Varisoft 222™ product referred to above comes as a 90% active system with 10% ethanol. Low boiling point solvents, such as low molecular weight alcohols (e.g. C_1-C_3 monoalcohols) may also be added to the fabric softener composition. However, the fabric

softener composition preferably contains a total of not more than 10% by weight of solvents whose boiling points are below 100°C. If too much low boiling point solvent is included the flash point of the composition becomes undesirably low.

The inventors have found that a number of relatively high boiling point solvents are effective solvents for cationic fabric softeners of formula (I). Effective solvents and solvent mixtures may be identified by plotting phase diagrams for ternary systems comprising fabric softener, test solvent or test solvent mixture, and water. The preferred solvents are those which facilitate production of an isotropic liquid over a wide range of concentrations of fabric softener component.

An alternative indicator of a solvent's effectiveness is the effect of the solvent on the freezing temperature of a ternary system including it. In general, depression of freezing temperature indicates an increase of solvent effectiveness. Because of the surprisingly low freezing temperatures which the present inventors have found may be obtained when compounds of formula (I) are included in the composition, it may be convenient to measure the effect of a solvent on freezing temperature in a model system which employs a different type of fabric softener compound. For example, the freezing temperature of a composition containing 40% Prapagen

3445™ (a commercial ditallow dimethyl ammonium chloride), test solvent, and the balance in water may be measured. Preferred solvents are those which, when present in this test system at a level of not more than 30% give rise to a freezing temperature of not more than 10°C. Particularly preferred solvents are those which are at least as effective as diethylene glycol butyl ether (also known as butyl carbitol) which produces a freezing temperature of around 9 to 10°C in a 40% Prapagen 3445, 30% diethylene glycol butyl ether, 30% water system.

The preferred solvents are those which are effective according to the tests outlined above and whose boiling points are sufficiently high that the flash point of the fabric softener composition is at least 40°C and, preferably at least 60°C. Preferably, the bulk of the organic solvent or organic solvent mixture is made up of a solvent or solvents whose boiling point is in excess of 100°C, preferably in excess of 150°C and, particularly preferably in excess of 180°C. Preferably, the ratio by weight of high boiling point (above 100°C) to low boiling point (below 100°C) solvent in the composition is at least 2:1, preferably at least 3:1, and particularly preferably at least 5:1.

Examples of suitable high boiling point solvents include polyols, especially diols such as propylene glycol, butylene glycol, pentylene glycol and hexylene

glycol, alkyl ethers of glycols or polyglycols, in particular alkyl ethers of diethylene glycol such as butyl carbitol, and small organic acids such as C_2 to C_6 mono-, di- or tri- carboxylic acids, for instance propionic acid or lactic acid. In many cases, it may be preferable to employ a mixture of high boiling point solvents, for example to increase the effectiveness of the solvent mixture, or to reduce the undesirable effect of any individual component. For example, in general, it is undesirable to include in the composition large quantities of organic acid because of possible irritant effects.

A high boiling point solvent which is particularly preferred in terms of its cost is propylene glycol. However, propylene glycol alone is not a particularly effective solvent for compounds of formula (I). Consequently, it is preferred to use propylene glycol in combination with another, more effective, high boiling point solvent. Preferably, the ratio by weight of propylene glycol to other high boiling point solvent in the composition is from 20:1 to 1:10, preferably from 10:1 to 1:5 and, particularly preferably, from 5:1 to 1:1. Preferred solvents for use in conjunction with propylene glycol include butyl carbitol, hexylene glycol and propionic acid.

Particularly preferred compositions of the present invention comprise:

30 to 60% by weight of a fabric conditioner of

formula (I);

20 to 40% by weight of propylene glycol;

5 to 15% by weight of other high boiling point solvent, such as butyl carbitol or hexylene glycol; and

0 to 10% by weight of a low boiling point solvent such as ethanol or isopropyl alcohol.

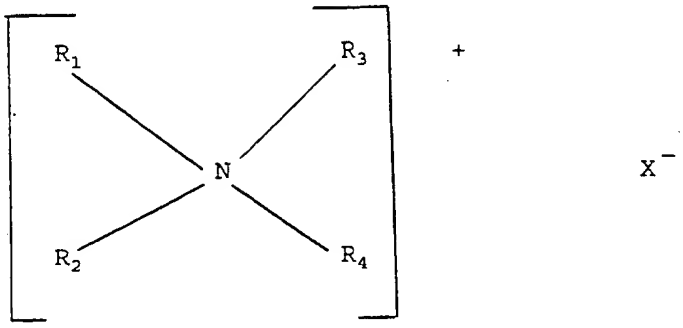
Compositions of the present invention preferably have freezing temperatures of -5°C or lower, particularly -10°C or lower and ideally, -15°C or lower.

In addition to a fabric softener of formula (I) some embodiments of the composition may include small amounts of other cationic fabric conditioners of known type provided that these may be solubilised in the solvent mixture to yield a substantially isotropic, or almost clear, liquid. Preferably, the ratio by weight of fabric softener of formula (I) to total other cationic fabric softener is at least 1:2, preferably at least 1:1, and, particularly at least 2:1.

The other cationic fabric softener can be any fabric-substantive cationic compound which has a solubility in water at pH 2.5 and 20°C of less than 10 g/l. Highly preferred materials are quaternary ammonium salts having two C_{12}-C_{14} alkyl or alkenyl chains, optionally substituted or interrupted by functional groups such as -OH, -O-, -CONH-, -COO-, etc.

Well known species of substantially water-

insoluble quaternary ammonium compounds have the formula:

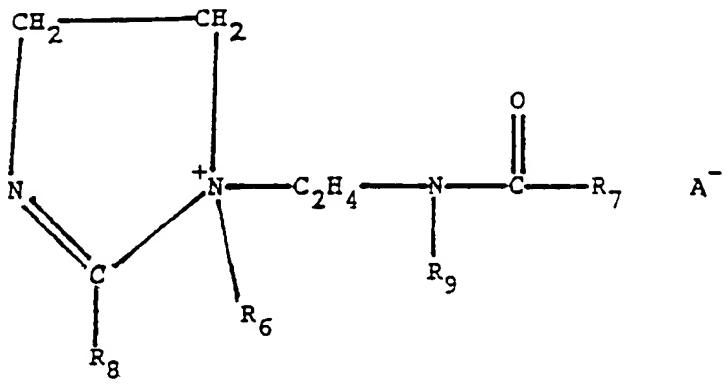


wherein R_1 and R_2 represent hydrocarbyl groups having from 12 to 24 carbon atoms; R_3 and R_4 represent hydrocarbyl groups containing 1 to 4 carbon atoms; and X is an anion, preferably selected from halide, methyl sulphate and ethyl sulphate radicals.

Representative examples of these quaternary softeners include ditallow dimethyl ammonium chloride; ditallow dimethyl ammonium methyl sulphate; dihexadecyl dimethyl ammonium chloride; di(hydrogenated tallow alkyl) dimethyl ammonium chloride; dioctadecyl dimethyl ammonium chloride; dieicosyl dimethyl ammonium chloride; didocosyl dimethyl ammonium chloride; di(hydrogenated tallow) dimethyl ammonium methyl sulphate; dihexadecyl diethyl ammonium chloride; di(coconut alkyl) dimethyl ammonium chloride. Also suitable are dialkyl ethoxyl methyl ammonium sulphates based on soft or hard fatty acids. Ditallow dimethyl ammonium chloride, di(hydrogenated tallow alkyl) dimethyl ammonium chloride, di(coconut alkyl) dimethyl ammonium chloride and di(coconut

alkyl) dimethyl ammonium methosulfate are preferred.

Another class of preferred water-insoluble cationic materials are the alkylimidazolinium salts believed to have the formula:



wherein R_6 is an alkyl or hydroxyalkyl group containing from 1 to 4, preferably 1 or 2 carbon atoms, R_7 is an alkyl or alkenyl group containing from 8 to 25 carbon atoms, R_8 is an alkenyl group containing from 8 to 25 carbon atoms, and R_9 is hydrogen or an alkyl containing from 1 to 4 carbon atoms and A- is an anion, preferably a halide, methosulphate or ethosulphate. Preferred imidazolinium salts include 1-methyl-1-(tallowylamido-) ethyl -2-tallowyl- 4,5-dihydro imidazolinium methosulfate and 1-methyl-1 (palmitoylamido)ethyl-2-octadecyl-4, 5-dihydro-imidazolinium chloride. Other useful imidazolinium materials are 2-heptadecyl-1-

methyl-1- (2-stearylamido)-ethyl-imidazolinium chloride and 2-lauryl-1-hydroxyethyl-1-oleyl-imidazolinium chloride. Also suitable herein are the imidazolinium fabric softening components of US Patent No. 4127489. Mixtures of various cationic fabric softening agents can also be used in addition to the compound of formula (I).

The composition can also contain one or more optional ingredients selected from pH buffering agents, such as weak acids, eg. phosphoric, benzoic or citric acids (the pH of the compositions are preferably less than 6.0), rewetting agents, viscosity modifiers, such as electrolytes and C_9-C_{24} fatty acids included at levels from 20 to 6000ppm, antigelling agents, perfumes, perfume carriers, fluorescers, colourants, hydrotropes, antifoaming agents, antiredeposition agents, enzymes, optical brightening agents, opacifiers, stabilisers such as guar gum and polyethylene glycol, anti-shrinking agents, anti-wrinkle agents, fabric crisping agents, anti-spotting agents, soil-release agents, germicides, fungicides, anti-oxidants, anti-corrosion agents, preservatives such as Bronopol (Registered Trade Mark), a commercially available form of 2-bromo-2-nitropropane-1, 3 diol, dyes, bleaches and bleach precursors, drape imparting agents, antistatic agents and ironing aids, such as silicones.

These optional ingredients, if added, are each

present at levels up to 5% by weight of the composition. The types and amount of any optional ingredient are preferably chosen such that it may be solubilised in the solvent mixture without affecting the substantially isotropic nature of preferred fabric softener compositions. Suitable silicones for use in the compositions according to the invention include predominantly linear polydialkyl or alkylaryl siloxanes in which the alkyl groups contain one to five carbon atoms. The siloxanes can be amido or amino substituted. When the siloxane is amino substituted the amine group may be quaternised.

The compositions may also contain, in addition to the cationic fabric softening agent, other non-cationic fabric softening agents, such as nonionic fabric softening agents. Typically such materials are included at a level within the range of from 5% to 10% by weight of the composition.

In use, the fabric conditioning composition of the invention may be added to a large volume of water to form a liquor with which the fabrics to be treated are contacted. Generally, the total concentration of the fabric softener composition in this liquor will be between 30ppm and 500ppm. The weight ratio of the fabrics to liquor will preferably be less than 25:1, most preferably between 10:1 and 4:1.

Compositions according to the invention may be prepared by a variety of methods which will be

apparent to those of skill in the art. They may conveniently be prepared by simple mixing of the ingredients at room temperature, preferably by mixing first the cationic and organic solvent and, subsequently, the water, if present.

Brief Description of the Drawings

Embodiments of the invention are described below, by way of example only, and with reference to the drawings of which:

Figs 1A and 1B show ternary phase diagrams for Varisoft 222™ (designated "V" in the figure), water (designated "W" in the figure), organic solvent systems in which the solvents tested were (i) ethanol (designated E); (ii) propylene glycol (designated P.G.); (iii) butyl carbitol (designated B.C.); and (iv) 4:1 propylene glycol: butyl carbitol (designated P.G./B.C.); in the phase diagrams "L" indicates an isotropic liquid, "Lα" a lamellar phase and "G" a gel.

Fig 2 shows how freezing temperature on the y-axis varies with percentage by weight of organic solvent on the x-axis for a variety of organic solvents in a system including 40% Prapagen 3445, test solvent and the balance in water; in the figure "P.G." designates propylene glycol, "B.C." designates butyl carbitol, "H.G." designates hexylene glycol, "IPA" designates isopropylalcohol, and "P.A." designates propionic acid.

Modes for carrying out the Invention

Example 1

Identification of Suitable Solvents

A. Phase Diagrams

Ternary phase diagrams for Varisoft 222/solvent/water systems were established by simple mixing of the ingredients at room temperature, water being added last. The Varisoft 222 was freeze dried prior to use to remove alcohol.

The results are shown in Fig 1. The regions of the phase diagrams designated L indicate the concentration ranges over which isotropic liquids were formed. Phase diagram (i) in which ethanol alone was used as organic solvent indicates that ethanol is a very effective solvent for Varisoft 222, it being possible to form an isotropic liquid over a wide range of Varisoft concentrations. However, ethanol alone is not a suitable solvent for inclusion in the compositions of the present invention because it gives rise to a very low flash point.

Diagram (ii) shows the effect of using, instead of ethanol, propylene glycol which is a much less flammable solvent. The diagram indicates that isotropic liquids may only be formed at low concentrations of Varisoft 222. Thus, although propylene glycol imparts desirable flammabilities it is not, when used alone, an ideal solvent for use in the compositions of the present invention.

Diagram (iii) shows that when another low flammability solvent, butyl carbitol is employed, isotropic liquids may be formed over a wide range of Varisoft concentrations. Diagram (iv) shows that when small amounts of butyl carbitol are included in a solvent mixture which is predominantly propylene glycol (4:1 propylene glycol: butyl carbitol) the phase diagram resembles that which may be achieved with butyl carbitol alone. Thus, the use of large quantities of the more expensive butyl carbitol solvent may be avoided by employing a mixture of solvents.

B. Freezing Temperature

Fig 2 shows the effect of organic solvent on freezing temperature in a test system of 40% Prapagen 3445, x% organic solvent, and (60-x)% water. The influence of solvent on freezing temperature in this system may be regarded as indicative of the effectiveness of the solvent in a system containing Varisoft 222 or other cationic softener of formula (I) in place of Prapagen 3445. In general, the lower the freezing temperature the more effective the solvent so that the figure indicates the ranking, in order of decreasing effectiveness:

propionic acid>isopropyl alcohol>hexylene glycol>butyl carbitol>propylene glycol.

Freezing temperature was measured by placing test

solution in an ethylene glycol-water bath and lowering the temperature by 1°C every 2 hours until the solution was observed to solidify.

As already mentioned, it is desirable that compositions based on compounds of formula (I) should include at least some of an organic solvent whose effectiveness according to this test is equivalent to or greater than that of butyl carbitol.

C. Flash Point

A range of solvents of varying boiling point were tested in the following formulation to ascertain the flash point of the formulation:

Varisoft 222	40%
Propylene Glycol	30%
Test Solvent	10%
Ethanol (from Varisoft)	4.44%
Water	to 100%

Flash points were measured in a Setaflash™ apparatus complying with the appropriate British Standards [BS390-A14 (1986), BS6664 part IV (1986) and BS3679 (1983)].

Examples are shown below (Table I) of product flash points obtained with a range of test solvents of varying boiling points.

TABLE I

Solvent	Boiling Point °C	Product Flash Point °C
Butyl Carbitol	231	56
Hexylene Glycol	197	57
Propionic Acid	141	58
Butan-1-ol	118	48
Propan-1-ol	97	40
Propan-2-ol	82	32
Ethanol	78	33
Ethyl acetate	77	5
Heptane	69	6
Acetone	56	<4

These results indicate that, in this formulation, where the boiling point goes much below 100°C it is difficult to obtain a flash point of 40°C or above.

In summary, these results indicate that when a compound of formula I, such as Varisoft 222 is employed as fabric softener, it is possible, by making an appropriate choice of solvent to formulate isotropic liquids having both high flash point and low flammability.

Example 2

Examples of formulations according to the present invention, and of their flash points and freezing temperatures are given below in Table II. All compositions had flash points of 30°C or above and

freezing temperatures around, or below -15°C. Varisoft 222 comes as a 90% active system with 10% added ethanol. Percentages given below for Varisoft indicate percentage by weight of the active component. Flash points of the compositions were determined using a Setaflash™ apparatus. Freezing temperatures were measured in an ethylene glycol-water bath as described above.

TABLE II

	1	2	3	4	5	6	7	8	9	10	11
Varisoft 222 LT 90 ™	40	50	40	50	20	20	40	40	40	40	40
Ethanol from raw material	4.44	5.55	4.44	5.55	2.22	2.22	4.44	4.44	4.44	4.44	4.44
Added ethanol	-	-	-	-	-	-	2.5	-	2.5	2.5	-
Hexylene glycol	25	22	-	-	25	-	5	10	-	-	-
Butyl carbitol	-	-	20	20	-	20	-	-	-	5	10
Propylene glycol	-	-	-	-	-	-	20	20	45	20	20
Water	<---------- to 100% ---------->										
Freezing Temp/°C	<----------≤15°C---------->										
Flash Point/°C	~70	~60	~70	~60	>70	>70	>40	~70	~30	~40	~40

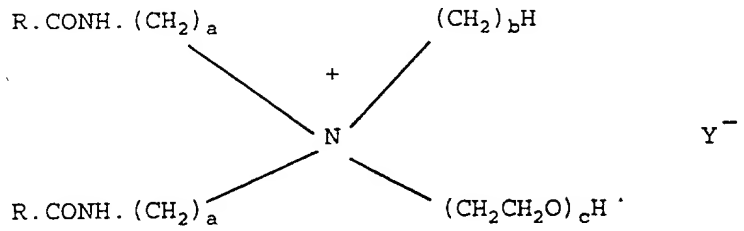
These results indicate that isotropic liquid fabric conditioner compositions having satisfactory flash points and freezing points may be obtained over a wide concentration range.

In order to establish that the concentrated, organic solvent based compositions behaved satisfactorily when diluted with water as occurs in a washing machine, the following tests were carried out. Softening tests were carried out after a wash/rinse process in a Japanese washing machine. Direct softening comparisons were made between 40% active, organic solvent based, products and a corresponding 5% Varisoft LT90 aqueous dispersion used at an equal active level. These tests could not separate the products indicating that the softening produced by the organic solvent based composition was equivalent to that of the aqueous composition.

CLAIMS

1. A fabric softener composition comprising:

(i) from 10 to 70% by weight of a cationic fabric softener of formula (I)



wherein each "a" and "b" is independently from 1 to 5, "c" is from 1 to 10, and each R is independently selected from saturated and unsaturated alkyl groups having from 14 to 22 carbon atoms and Y^- is an anion;

(2) from 10 to 60% by weight of an organic solvent, or organic solvent mixture; and, optionally,

(3) water;

said cationic fabric softener being soluble in said organic solvent or organic solvent mixture and water (if present) and said solvent or solvent mixture being chosen such that the flash point of the composition is at least 25°C.

2. A fabric softener composition according to claim 1 having a flash point of at least 30°C.

3. A fabric softener composition according to claim 2 having a flash point of at least 40°C.

4. A fabric softener composition according to claim 3 having a flash point of at least 50°C.

5. A composition according to any one of the preceding claims wherein all, or a major part by weight of the organic solvent, or organic solvent mixture comprises a solvent, or solvents, whose boiling point is 100°C or above.

6. A fabric softener composition according to any one of claims 1 to 4 wherein said organic solvent mixture comprises at least one solvent whose boiling point is below 100°C and at least one solvent whose boiling point is at least 100°C said solvent having a boiling point of below 100°C constituting not more than 10% by weight of the composition and the ratio by weight of solvent(s) having a boiling point of at least 100°C to solvent (s) having a boiling point below 100°C being at least 2:1.

7. A fabric softener composition according to claim 5 or claim 6 wherein the solvent whose boiling point is at least 100°C is selected from organic acids, polyols, and alkyl ethers of glycols or polyglycols, and mixtures thereof.

8. A fabric softener composition according to claim

7 wherein the solvent is selected from propylene glycol, butylene glycol, pentylene glycol and hexylene glycol, butyl carbitol, propionic acid and lactic acid.

9. A fabric softener composition according to any one of the preceding claims wherein the organic solvent mixture comprises propylene glycol and at least one other solvent whose boiling point is 100°C or above, the ratio by weight of propylene glycol to said at least one other solvent lying in the range 20:1 to 1:10.

10. A fabric softener composition according to any one of the preceding claims comprising:

30 to 60% by weight of a fabric conditioner of formula (I);

20 to 40% by weight of propylene glycol;

5 to 15% by weight of at least one other solvent having a boiling point of 100°C or more;

0 to 10% by weight of at least one low boiling point solvent which boils at a temperature below 100°C.

11. A composition according to any one of the

preceding claims having a freezing temperature of -5°C or lower.

12. A composition according to claim 9 having a freezing temperature of -15°C or below.

13. A composition according to any one of the preceding claims which is a substantially isotropic liquid.

Fig. 1A.

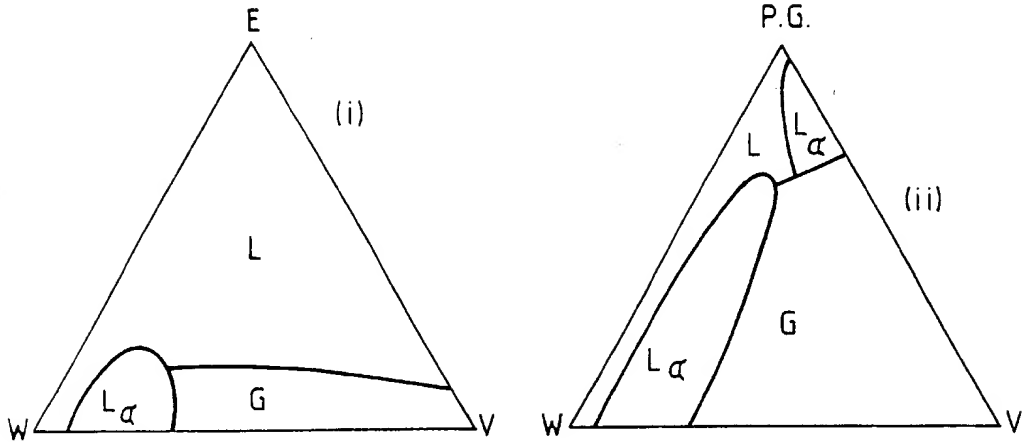


Fig. 1B.

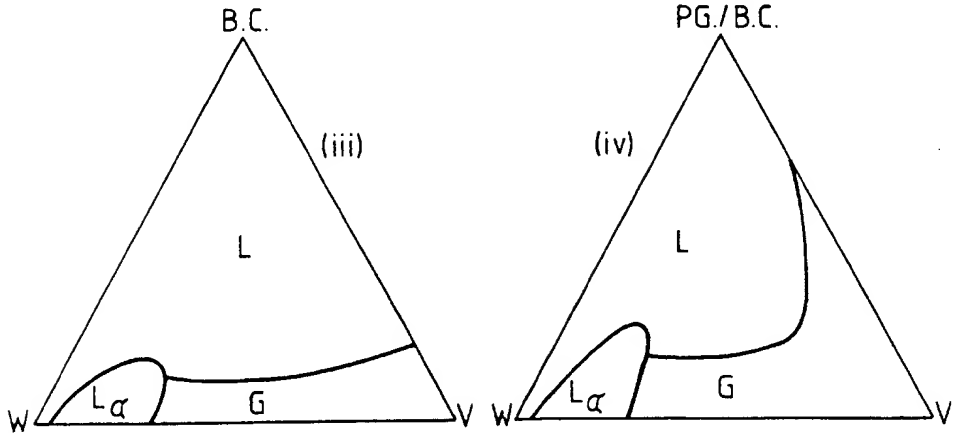


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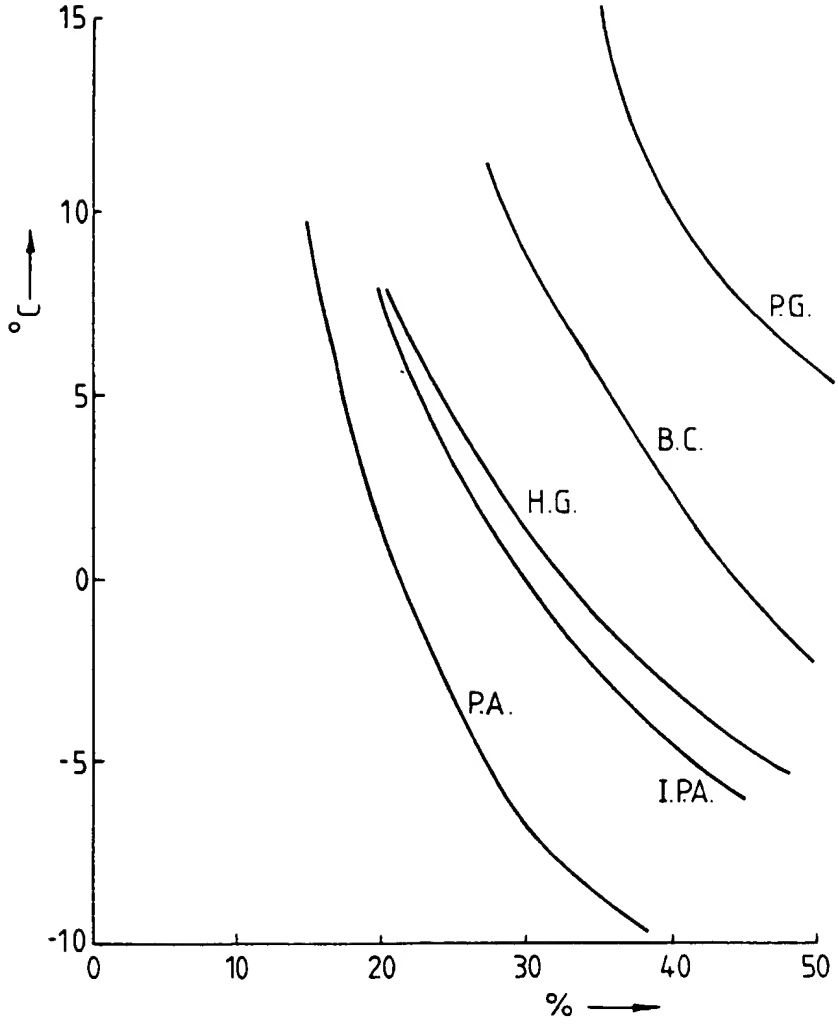
Fig.2.



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INTERNATIONAL SEARCH REPORT

Intl. .onal Application No
PCT/EP 94/00174

A. CLASSIFICATION OF SUBJECT MATTER
IPC 5 C11D3/00 C11D1/62

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 5 C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO,A,88 10294 (COTELLE S.A.) 29 December 1988 see page 3, line 27 - line 36 see page 4, line 36 - page 5, line 24 see page 6, line 30 - page 7, line 8 see page 10, line 6 - line 10; claims	1-13
X	EP,A,0 234 082 (ECOLAB INC.) 2 September 1987 see page 6, line 1 - line 19 see page 7, line 19 - line 43; claims	1-13
X	EP,A,0 038 862 (ALBRIGHT & WILSON LTD.) 4 November 1981 see claims	1

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
9 May 1994	20. 05. 94

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax (+ 31-70) 340-3016	Blas, V

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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A	GB,A,2 168 392 (COLGATE-PALMOLIVE COMPANY) 18 June 1986 see the whole document ---	1-13
A	EP,A,0 125 103 (THE PROCTER & GAMBLE COMPANY) 14 November 1984 see the whole document ---	1-13
A	EP,A,0 040 562 (LESIEUR COTELLE & ASSOCIES S.A.) 25 November 1981 see the whole document. -----	1-13

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. ...ional Application No
PCT/EP 94/00174

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